SQL injection

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La **SQLi** est une faille de sécurité web qui permet à un attaquant de manipuler les requêtes SQL d'une application.
Elle peut permettre de :

- Lire des données sensibles (même celles d'autres utilisateurs),
- Modifier ou supprimer des données,
- Parfois, **prendre le contrôle du serveur** ou lancer des attaques (ex. déni de service).

Elle exploite des entrées non sécurisées dans les requêtes vers la base de données.

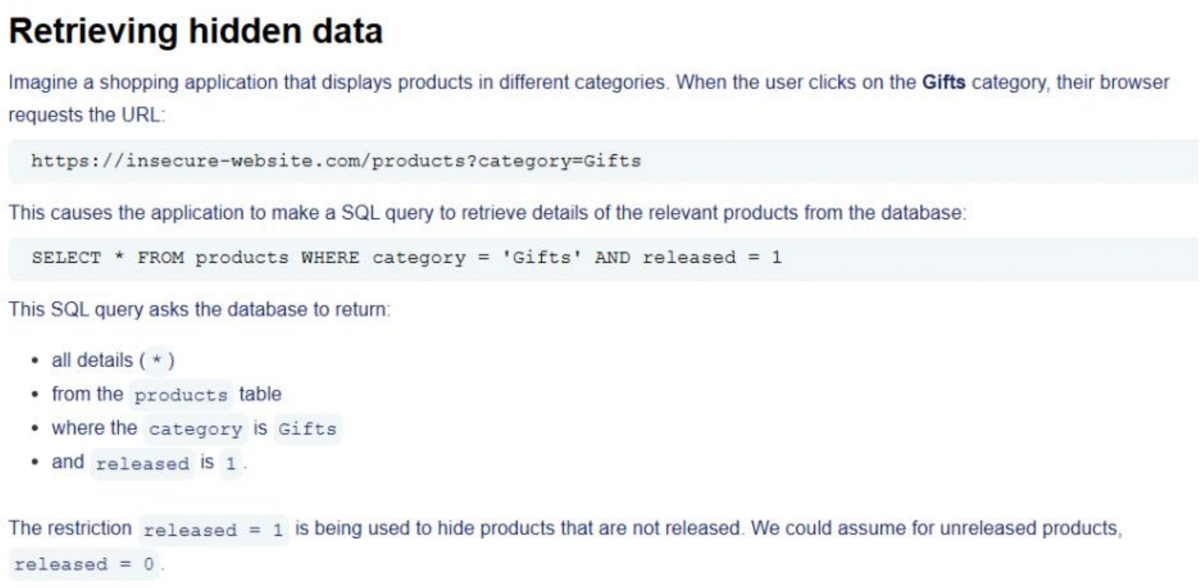
How to detect SQL injection vulnerabilities

Pour détecter cette vulnérabilité on peut tester ces submit :

'OR 1=1

OR 1=2

Sinon voir oscp.



Retrieving hidden data

Imagine a shopping application that displays products in different categories. When the user clicks on the **Gifts** category, their browser requests the URL:

```
https://insecure-website.com/products?category=Gifts
```

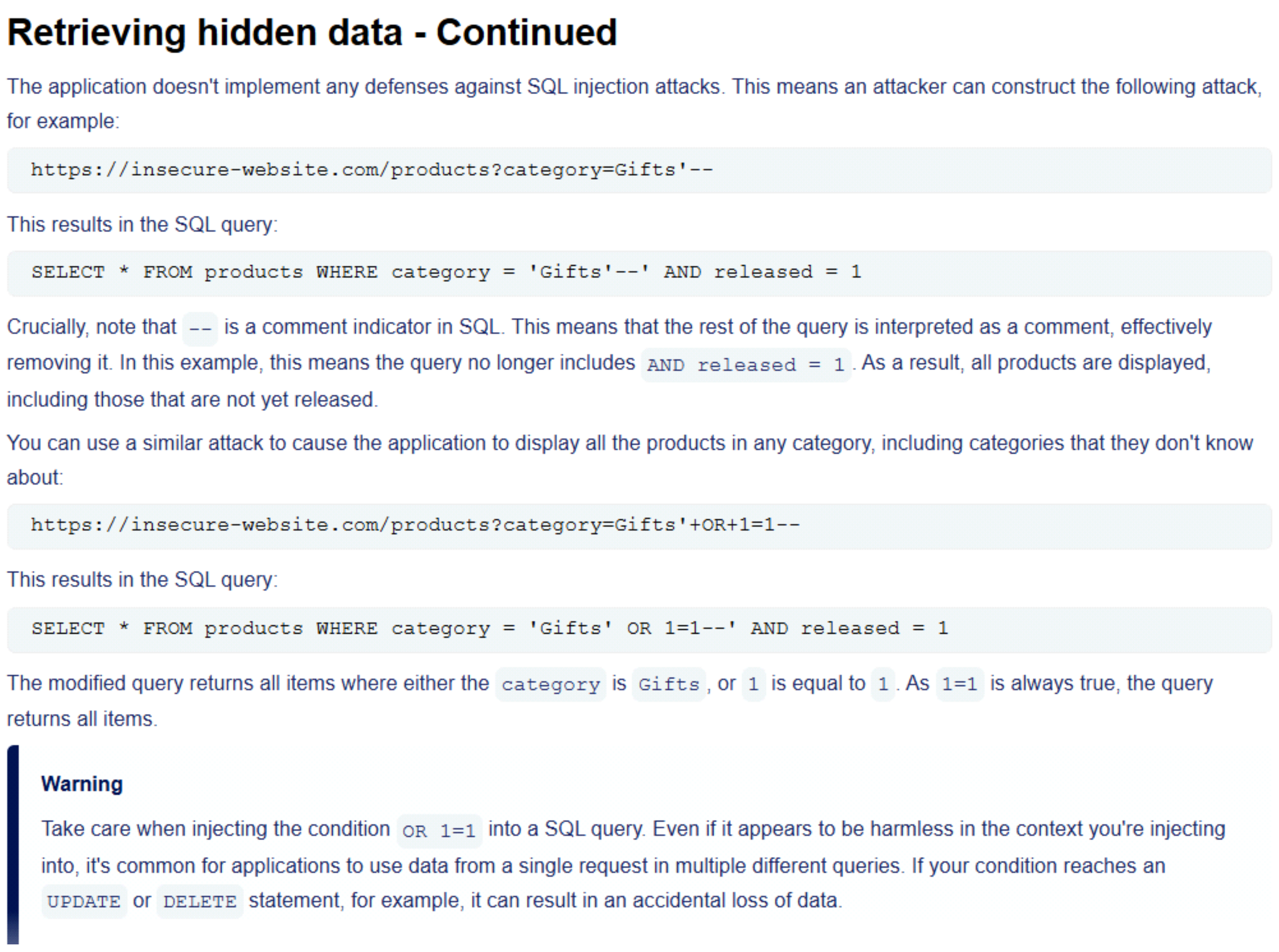
This causes the application to make a SQL query to retrieve details of the relevant products from the database:

```
SELECT * FROM products WHERE category = 'Gifts' AND released = 1
```

This SQL query asks the database to return:

- all details (`*`)
- from the `products` table
- where the `category` is `Gifts`
- and `released` is `1`.

The restriction `released = 1` is being used to hide products that are not released. We could assume for unreleased products, `released = 0`.



Retrieving hidden data - Continued

The application doesn't implement any defenses against SQL injection attacks. This means an attacker can construct the following attack, for example:

```
https://insecure-website.com/products?category=Gifts'--
```

This results in the SQL query:

```
SELECT * FROM products WHERE category = 'Gifts'--' AND released = 1
```

Crucially, note that `--` is a comment indicator in SQL. This means that the rest of the query is interpreted as a comment, effectively removing it. In this example, this means the query no longer includes `AND released = 1`. As a result, all products are displayed, including those that are not yet released.

You can use a similar attack to cause the application to display all the products in any category, including categories that they don't know about:

```
https://insecure-website.com/products?category=Gifts'+OR+1=1--
```

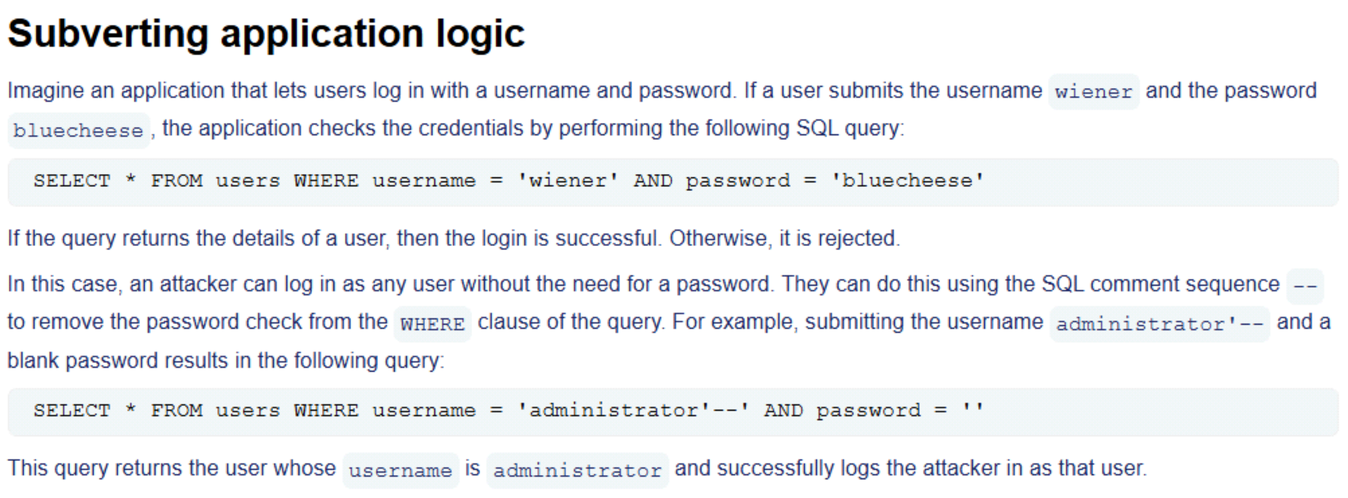
This results in the SQL query:

```
SELECT * FROM products WHERE category = 'Gifts' OR 1=1--' AND released = 1
```

The modified query returns all items where either the `category` is `Gifts`, or `1` is equal to `1`. As `1=1` is always true, the query returns all items.

> **Warning**
>
> Take care when injecting the condition `OR 1=1` into a SQL query. Even if it appears to be harmless in the context you're injecting into, it's common for applications to use data from a single request in multiple different queries. If your condition reaches an `UPDATE` or `DELETE` statement, for example, it can result in an accidental loss of data.

Pour bypasser des users :



Subverting application logic

Imagine an application that lets users log in with a username and password. If a user submits the username `wiener` and the password `bluecheese`, the application checks the credentials by performing the following SQL query:

```
SELECT * FROM users WHERE username = 'wiener' AND password = 'bluecheese'
```

If the query returns the details of a user, then the login is successful. Otherwise, it is rejected.

In this case, an attacker can log in as any user without the need for a password. They can do this using the SQL comment sequence `--` to remove the password check from the `WHERE` clause of the query. For example, submitting the username `administrator'--` and a blank password results in the following query:

```
SELECT * FROM users WHERE username = 'administrator'--' AND password = ''
```

This query returns the user whose `username` is `administrator` and successfully logs the attacker in as that user.